



The IEEE

# Newsletter

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

## North Jersey Section Activities February 1995

NY/NJ/LI EMBS:

### Omnidirectional Oscillation

On February 16, 1995, the Metropolitan Section Engineering in Medicine and Biology Society will present "Omnidirectional Oscillation—A New Discovery In Mechanics With Diverse Applications In Engineering And Biotechnology." The speaker will be Marvin J. Glover.

#### About The Talk

Mr. Glover will discuss the Omnidirectional Oscillator (Glover Gear) Patent Number 4,924,718.

Omnidirectional Oscillation is perhaps easiest to visualize if one were to imagine a grandfather clock with any number of pendulums all rigidly attached to a common fulcrum and all swinging in phase, each in a unique plane. This entire assembly is one rigid structure.

If one were to mount scanning devices to the ends of the pendulums one could theoretically scan in all directions simultaneously. With a different configuration, you could bombard convergently, focusing on one point while continuously moving all the beams.

Some of the applications in biotechnology of this discovery include real time 3-D ultrasound scanning and stereotactic radiation therapy.

#### About The Speaker

Marvin J. Glover, inventor, formerly the Technical and Administrative Director of the Non-Invasive Cardiology Laboratory at Providence Hospital in Washington, DC, was the principal investigator of the research described in "The Effects of Long Term Hemodialysis in Chronic Renal Failure" presented to the American Heart Association's 59th scientific session.

**Time:** 7:30 PM, Thursday, February 16, 1995.

**Place:** Rockefeller Univ., Tower Bldg., Room 305, 1200 York Avenue, NYC.

**Directions/Parking:** Entrance gate at 66th Street. Free parking. By subway—68th on #6 (Lex). By bus—M15, M31, M58, or M66.

**Further Information:** Joel Levitt (718) 891-6460; Andrew Baxt or Susan Baxt (516) 678-6563.

**Feb. 1, 1995**—"North Jersey Section Executive Committee Meeting"—7:00 PM, Plant 11, GEC-Marconi, 164 Totowa Road, Totowa, N.J. Mel Lewis (914) 968-2500, Ext. 2304.

**Feb. 8**—"Microcellular Propagation Characteristics For Personal Communications In Urban and Suburban Environments"—North Jersey IEEE Vehicular Technology Society, 7:30 PM, Fairleigh Dickinson Univ., Teaneck Campus, Rm. M207, Muscarelle Bldg., River Road at Rte. 4, Mel Lewis (914) 968-2500, ext. 2304.

**Feb. 9**—"Engineers, Jobs, And The New World Order"—North Jersey Section PACE, 7:30 PM, JCP&L Co., 300 Madison Ave. & Punch Bowl Rd., Morristown, N.J. Robert Sinusas (201) 228-3941.

**Feb. 14**—"Progress In Optical Fiber Based Access Networks"—Laser & Electro Optics Chapter jointly with the Center for Communication & Signal Processing at NJIT, 7:00 PM, NJIT, Room 202, ECE Bldg., Newark, N.J. Haim Grebel (201) 596-5680.

**Feb. 16**—"Multilayered Microwave And Millimeter Wave Integrated Circuits And Antennas"—NJ MTT/AP Chapter, 7:00 PM, NJIT, 2nd Floor Conf. Rm., 202 ECE Bldg., Newark, N.J. Chandra Gupta (201) 633-4469 (GEC-Marconi).

**Feb. 16**—"Omnidirectional Oscillation—A New Discovery In Mechanics With Diverse Applications In Engineering And Biotechnology"—NY/NJ/LI EMBS, 7:30 PM, Rockefeller Univ., Tower Bldg., Room 305, 1200 York Ave., NYC. Joel Levitt (718) 891-6460.

**Feb. 23**—"Becoming A Consultant"—Consultants' Network of Northern New Jersey, 7:30 PM, AT&T Bell Labs, 67 Whippany Rd., Whippany, N.J. Robert Walker (201) 736-0771.

**Feb. 28**—"Resource Auction Multiple Access In The Cellular Environment"—North Jersey Chapter, IEEE Vehicular Technology Society, 7:30 PM, KDI/Triangle Electronics Inc., 60 S. Jefferson Road, Whippany, N.J. Mel Lewis (914) 968-2500, ext. 2304.

#### Upcoming Meetings

**March 1**—"North Jersey Section Executive Committee Meeting"—7:00 PM, Plant 11, GEC-Marconi, 164 Totowa Road, Totowa, N.J. Mel Lewis (914) 968-2500, Ext. 2304.

**March 20**—"Effect Of Fading Correlation On Adaptive Arrays In Digital Mobile Radio"—North Jersey Section Vehicular Technology Chapter, 7:30 PM. For location call Mel Lewis (914) 968-2500, ext. 2304.

**Members and Non-Members Welcome  
PLEASE POST**

**FEBRUARY, 1995**

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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.**

## Vehicular Technology Soc.: New Microcellular Systems In Communications

On February 8, 1995, the North Jersey Chapter, IEEE Vehicular Technology Society will present a talk on "Microcellular Propagation Characteristics For Personal Communications In Urban And Suburban Environments." The speaker will be Henry L. Bertoni.

### About The Talk

Future personal communication services will rely on the microcellular concept to enhance radio spectral efficiency. New microcellular systems have been proposed to operate over short radio paths by using low (lamp post height) base station antennas and transmitting at low power. This talk will report on measurements of propagation characteristics made for such systems operating in the 900 and 1900 MHz bands in urban and suburban environments. Dr. Bertoni will also discuss theoretical descriptions of the propagation process that are based on reflection and diffraction, and that explain the observed dependence of the received signal on parameters such as frequency, antenna height and building geometry.

### About The Speaker

Henry L. Bertoni received the BSEE degree from Northwestern University, and the MSEE degree and PhD degrees, from Polytechnic Institute of Brooklyn (now Polytechnic University). After graduation, he joined the faculty at Polytechnic, where he is now head of the Department of Electrical Engineering. His research has dealt with wave phenomena in electromagnetics, ultrasonics, acoustics, and optics. He has authored or coauthored over 100 articles on these topics. Dr. Bertoni is a Fellow of the IEEE and was the first chairman of the Technical Committee on Personal Communications of the IEEE Communications Society. He is a member of the International Scientific Radio Union and the New York Academy of Science.

### 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, Wednesday, February 8, 1995.

**Place:** Fairleigh Dickinson University, Teaneck Campus, Rm. M207, Muscarelle Bldg., River Road at Route 4.

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

## IEEE LEO Chapter: Progress In Optical Fiber Based Access Networks

On February 14, 1995, the IEEE Laser and Electro Optics Chapter together with the Center for Communication and Signal Processing at NJIT will organize a talk, "Progress In Optical Fiber Based Access Networks." The speaker at this meeting will be Dr. Howard L. Lemberg from Bellcore, Morristown, N.J.

### About The Talk

After many years of research and engineering optimization, telephone and cable television companies are beginning to install optical-fiber-based access networks to support advanced broadband services. This talk will review the major technological advances that are making it possible to deploy high-speed networks to residential communications customers and will discuss remaining obstacles that must be overcome for fiber-rich networks to achieve widespread deployment. Finally, the likely evolution paths for broadband local access networks will be addressed.

### About The Speaker

Howard L. Lemberg is Director of Integrated Access Network Research at Bellcore, where he has led research groups since 1984 in applying emerging optical and electronic technologies to advanced network architectures capable of delivering broadband integrated services. His research there has focused on optical and coaxial architectures for interoffice and subscriber loop networks, with particular emphasis on interoffice fiber network topologies, passive optical loop architectures, and fiber-coax networks. He received a Bachelor's degree from Columbia University in 1969 and a PhD in chemical physics from the University of Chicago in 1973.

Prior to joining Bellcore, Dr. Lemberg held positions at Bell Laboratories in switching, data communications and materials research.

Dr. Lemberg is a senior member of IEEE, where he is active in the Communications Society and is Vice Chairman of the Optical Communications Committee. He has given many conference talks on optical networks, organized conference sessions on optical subscriber loops and other topics, and has published more than 25 technical papers on communications protocols, optical networks and other subjects.

Pizza and soda will be served free of charge at 6:45 PM.

**Time:** 7:00 PM, Tuesday, Feb. 14, 1995.

**Place:** NJIT, Seminar Room 202, ECE Bldg., Newark, N.J.

**Information:**

Haim Grebel (201) 596-3533.



## **NJ MTT/AP Chapter: Multilayered MMIC's In Communications**

On February 16, 1995 the IEEE North Jersey Section MTT/AP Chapter will present "Multilayered Microwave And Millimeter Wave Integrated Circuits And Antennas." The speaker at this meeting will be Dr. Nirod K. Das, Assistant Professor at Polytechnic University.

### **About The Talk**

Multilayered Microwave and Millimeter Wave Integrated Circuits (MMIC's) having increased density and complexity will play a greater role in advanced satellite, automotive and personal communication systems of the future. The general concept of a multilayer MMIC architecture is to fabricate sub-circuits on different electrically isolated substrates of a multilayer substrate configuration, establishing the necessary electrical connections between layers only at selected places via proximity or electromagnetic coupling. In addition to its increased available area of integration, such an architecture has the advantage of design-modularity of the sub-circuits. Integrated together with digital, other control circuitry, as well as printed antennas onto different layers of the same multilayer configuration, such multilayer circuits can be flushed on an automobile body providing various communication and navigational links to the smart automobile of the future.

New multilayer transmission lines, printed antennas, and effective methods of layer-to-layer interconnections between them via electromagnetic coupling, are the key building blocks for the multilayer technology. This talk will present the analysis and computer-aided design of such multilayer planar transmission lines, antennas and surface-to-surface transitions. Critical multilayer propagation effects will be addressed, and CAD tools for the multilayer designs being developed at the Polytechnic University will be discussed.

### **About The Speaker**

Dr. Das received the MS and PhD degrees in electrical engineering from the University of Massachusetts. He received a prize paper award from the US National Council of URSI, and the 1992 R.W.P. King Best Paper Award from the Antennas and Propagation Society of IEEE for his multilayer printed antenna work.

**Time:** 7:00 PM, Thursday, Feb. 16, 1995.  
Free pre-meeting buffet for attendees at 6:15. All Welcome.

**Place:** NJIT, 2nd Floor Conference Room, 202 ECE Bldg., Newark, N.J.

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

## **Vehicular Technology Soc.: Resource Auction Multiple Access In The Cellular Environment**

On February 28, 1995, the North Jersey Chapter, IEEE Vehicular Technology Society will present a talk on "Resource Auction Multiple Access (RAMA) In The Cellular Environment." The speaker will be Dr. Noach Amitay of ATT Bell Labs, Holmdel, N.J.

### **About The Talk**

RAMA is a collision proof technique for rapidly assigning communication resources, TDMA time slots for example, in a wireless environment—to accommodate fast moving subscribers. Dr. Amitay will discuss the applicability of RAMA to the cellular environment, and how this scheme ensures that a resource assignment is made in each assignment cycle (barring errors caused by fading and noise). The effects of channel fading and noise, in both GSM and IS-54 environments will be discussed, with emphasis on the subscriber to base link. Call assignment and statistical speech multiplexing modes will be discussed showing that a simple form of two-branch diversity can be very effective.

### **About The Speaker**

Noach Amitay received the BSc and Diplome Ingenieur degrees from Technion, Israel Institute of Technology and the MSc and PhD degrees in electrical engineering from Carnegie Institute of Technology, the latter in 1960. He joined Bell Labs in 1962 where he conducted research in phased array antennas and electromagnetic theory. More recently he has been involved in studies of satellite communications antennas, digital radio communications, lightwave networks, and personal communications systems. He is a Distinguished Member of the Technical Staff in the Wireless Communications Research Dept. at Bell Labs, Holmdel. He is a member of the International Scientific Radio Union and is a Fellow of the IEEE.

### **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, Tuesday, February 28, 1995.

**Place:** KDI/Triangle Electronics Inc., 60 South Jefferson Road, Whippany, N.J. (Near Route 287, Route 10 exit.)

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

## **North Jersey Section PACE: Engineers, Jobs, And The New World Order**

At the February 9, 1995 meeting of the North Jersey Section's Professional Activities Committee for Engineers, speaker Rodney Cole will discuss "Engineers, Jobs, And The New World Order."

### **About The Talk**

How does the current social-political ideology in the United States and around the world impact on domestic engineering employment? Where is the job market heading? Are we really in the middle of a new economic revolution?

These questions and others will be addressed as part of an effort to understand the present condition of the engineering profession and its future.

### **About The Speaker**

Mr. Rodney Cole has 12 years experience as a development/evaluation engineer. He currently works as a Reliability Engineer at Electro-Biology, Inc., located in Parsippany, N.J. He has also held production engineering positions at Siemens Hearing Instruments, Inc., and Crosspoint-Latch Corporation.

**Time:** 7:30 PM, Thursday, February 9, 1995.

**Place:** JCP&L Co., 300 Madison Avenue and Punch Bowl Road, Morristown, N.J.

**Information:**

Robert Sinusas (201) 228-3941.

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## **Vehicular Technology Soc.: 1995 Symposium Call For Papers**

The North Jersey Section of the Vehicular Technology Society is sponsoring a one day Symposium on Saturday, October 28, 1995 to be held at the Meadowlands Hilton.

The Symposium will be the first of what is hoped will be an annual event. It will address any and all topics of vehicular technology including personal communications; vehicular electronics, including control, collision avoidance, communication, and Intelligent Vehicle Highway Systems; and transportation systems.

The number of sessions will be dependent on the number of papers submitted. A call for papers has been announced and local members are encouraged to submit an abstract of up to 400 words for review. Abstracts should be submitted to Arthur Greenberg, RS Microwave Company, 22 Park Place, Butler, NJ 07405-0273.



## No. NJ Consultants' Network: Becoming A Consultant

On February 23, 1995, the IEEE Consultants' Network of Northern NJ will present a discussion on the topic of becoming a Consultant. Following the discussion several members will give presentations of their backgrounds and services.

### Discussion Topics

Spring is coming: the time of year when you look out your window and wish you were in business for yourself, not an employee of someone else. This meeting of C>NNNJ will be devoted to you.

The following questions will be addressed:

1. Should I become a consultant?
2. If so, when should I become a consultant?
3. How do I prepare for the big step?
4. What are the things I'm forgetting?

Several speakers from C>NNNJ will address these various topics. We will have a panel to answer questions. And, we will have networking time for one-on-one discussions. We also invite experienced consultants to attend to contribute advice.

### Featured Consultants

The Featured Speaker series has been expanded to include Network consultants. The purpose is to introduce managers, owners, lawyers and others contemplating the use of consultants to the technical background, capabilities and services of the featured consultants.

**Eric Holme** is President of Mechanical and Electrical Systems Analysis, Inc. (MESA), and has over 30 years of experience in installing, commissioning, and maintaining high-voltage power-generation equipment. He recently designed and installed a power-plant monitoring and data-acquisition system for EPRI, and is currently installing solid state instruments to improve power metering accuracy and data acquisition. Prior to forming MESA he was a senior engineer with a large electrical utility in New York State, and a field engineer with the GE Company, building and starting power plants in the US and overseas.

**John Kalnowski** designs circuits, systems and subsystems that measure, quantify, record or analyze ultraviolet, visible or near infra-red light emissions. He utilizes charge coupled devices (CCD), photodiode arrays, image intensifiers, photo multiplier tubes and other sensors to solve all types of light measurement problems in the scientific, medical and industrial markets. In addition, he designs analog electronic circuits spanning the frequency range of DC to 400 MHz; covering nanovolts to kilovolts and femtoamps to amps. He has designed and developed over twenty scientific and analytical instruments that

sell world-wide. In 1991, he established ElectroSolutions, Inc.—a provider of custom engineering services. The company has developed five instruments for client companies and this year introduced two new products of its own.

**Martin Sperber** specializes in Product Development, Expert Witness, Patent Litigation, FCC Regulations, Computer Modeling, Prototypes, Market Research, Operations Management, and Forecasting Models, Broadcasting, CATB, Cellular, Data and Microwave communications systems. He is also an inventor, with several patents in Video, TV and addressable encryption systems. FCC proof of performance and rule making petitions (over 200 applications in broadcasting, microwave and cellular service). Analog, Digital and RF circuit/system design (DC through microwaves). CAE software to design 900 MHz bandwidth TV/data distribution systems. Antenna design and test range. EMI and RF signal coverage analysis. R&D Lab.

### 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. For a complimentary copy of the Directory of Consultants and Consulting Services, call Alex Richardson (201) 535-3440.

**Time:** 7:30 PM, Thursday, Feb. 23, 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.

## Vehicular Technology Soc.: Meeting Calendar

The North Jersey Chapter, IEEE Vehicular Technology Society will present the following topics on the listed dates:

### March 20 -

"Fading Correlation"

Speaker - J. Winters (Bell/Holmdel).

### April 3 -

"Channel Assignment"

Speaker - T. P. Cau (Stony Brook)

### April 24 -

"Propagation Prediction"

S. Seidel (Bellcore)

### Early April -

"Intelligent Transportation System"

D. Blanchard (Loral)

For further information contact : Mel Lewis (914) 968-2500, ext. 2304, or Art Greenberg (201) 492-1207.

## Vehicular Technology Soc.: Effects Of Correlations Among Fading Signals

On March 20, 1995, IEEE North Jersey Vehicular Technology Society will present a talk on "The Effect Of Fading Correlation On Adaptive Arrays In Digital Mobile Radio." The speaker will be Jack Winters

### About The Talk

Dr. Winters will discuss his investigations on the effect of correlations among the fading signals at the antenna elements of an adaptive array. He will describe how, with an adaptive array, the signals received by multiple antennas can be optimally weighted and combined to suppress interference and combat multipath signal fading to increase the performance and capacity of wireless systems.

### About The Speaker

Jack H. Winters received the BSEE degree from the University of Cincinnati, Ohio in 1977, and the MS and PhD degrees in electrical engineering from the Ohio State University in Columbus Ohio, in 1978 and 1981 respectively. Since 1981, he has been with Bell Labs where he is in the Digital Communications Research Dept. He has studied signal processing techniques for increasing capacity and reducing signal distortion in fiber optic, mobile radio and indoor radio systems and is currently studying adaptive arrays and equalization for indoor and mobile radio.

### 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, March 20, 1995.

**Place:** Call for information.

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

## Do It Now! Upgrade To Senior

If your membership grade is Member or Associate, you may be qualified to advance to Senior Member grade.

Get information on advancing to Senior Member by contacting Don Weinstein, Kulite Semiconductor, One Willow Tree Rd., Leonia, N.J. 07605-2239, (201) 461-0900, ext. 3106, or Amy Bissmeyer, Videx Equipment Corp., 170 Railroad Avenue, Paterson, NJ 07501, (201) 742-2381, ext. 24.